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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,030	04/10/2001	Laszlo Hevesi	VANM215.001AUS	8359

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EXAMINER

TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
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1639

DATE MAILED: 11/29/2002

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,030

Applicant(s)

HEVESI ET AL.

Examiner

My-Chau T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12 is/are pending in the application.
- 4a) Of the above claim(s) 11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

1. Applicant's amendment filed 9/13/02 in Paper No. 10 is acknowledged and entered. Claim 1 is canceled. Claims 2-3, 5-6, and 8 are amended. Claims 11-12 have been withdrawn from further consideration a being drawn to a non-elected invention. Claims 2-12 are pending. Further, applicant has submitted a declaration under 37 CFR 1.132 filed 9/13/02 that is insufficient to overcome the rejection of claims 2-10 based upon Barner et al. (US Patent 5,986,066) in view of either Weetall (*Applied Biochemistry and Technology*, 41:157-188, 1993) or Sundberg et al. (Us Patent 5,624,711) applied as under 35 U.S.C. 103(a) as set forth in the last Office Action.

Election/Restrictions

2. Claims 11-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Drawings

3. The corrected or substitute drawings were received on 9/13/02. These drawings are acceptable.

Withdrawn Rejections

4. The previous rejections under 35 U.S.C. 112, first and second paragraph for Claims 1-10, have been withdrawn in view of applicant's amendments and cancellation of Claim 1.

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5. The previous rejections under 35 U.S.C. 103(a) as being obvious over Befani et al. (*Biotech. Appl. Biochem.*, 28:99-104, 1998) in view of Sundberg et al. (Us Patent 5,624,711) and Weetall (*Applied Biochemistry and Technology*, 41:157-188, 1993) in view of Sundberg et al. (Us Patent 5,624,711) for Claims 1, 3, 6, and 8-10 in have been withdrawn in view of applicant's amendments and cancellation of Claim 1.

6. Maintained rejections are set forth below along with response to declaration under 37 CFR 1.132 and arguments.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Maintained Rejections

Claim Rejections - 35 USC § 103

8. Claims 2-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barner et al. (US Patent 5,986,066) in view of either Weetall (*Applied Biochemistry and Technology*, 41:157-188, 1993) or Sundberg et al. (Us Patent 5,624,711).

Barner et al. teaches a method of oxidizing octenyl trichlorosilane, an olefin on a solid surface, with permanganate and periodate to form a functional group for immobilizing a protein (col. 8, lines 36-47; col. 3, lines 60-65). The immobilization of the biological or chemical molecules on a solid support results in an array with discrete regions (col. 2, lines 6-17; fig. 1-3).

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Barner et al. method differs from the claimed invention in failing to include aldehyde as a functional group and the solid support is glass.

Weetall and Sundberg et al. disclosed having an aldehyde as a functional group for the immobilization of biological or chemical molecules (Weetall: pg. 167, Fig. 6; pg. 165, lines 25-28 to pg. 166, lines 1-4; Sundberg et al.: fig. 8). The solid support is glass (Weetall: pg. 158, lines 38-39; Sundberg et al.: Fig. 8-11; col. 11, line 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Barner et al. by including the aldehyde functional group as taught by Weetall and Sundberg et al. because it is well known that any suitable functional group such as an aldehyde, a carboxylic acid or amine can be use for the immobilization of biological or chemical molecules (Weetall: pg. 166, lines 3-23; Sundberg et al.: Fig. 8-11; col. 2, line 19-24; col. 16, lines 32-37; col.3, lines 60-65). Therefore, it would have been an obvious matter of design choice to have an aldehyde functional group rather than a carboxylic acid group (Barner et al.). This is particularly true since in the Barner et al. process it would be expected that the octenyl group would first be oxidized to an aldehyde and then further oxidized to the carboxylic acid. Since applicant has not disclosed that the aldehyde functional group solves any stated problem or is for any particular purpose, it appears that the invention would perform equally well with either an aldehyde or a carboxylic acid as a functional group.

The feature "4 or more discrete regions/cm² of the solid support" of claim 2 constitutes obvious variations in parameters which are routinely modified in the art and which have not been described as critical to the practice of the invention.

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Response to Amendment

9. The declaration under 37 CFR 1.132 filed 9/13/02 is insufficient to overcome the rejection of claims 2-10 based upon Barner et al. (US Patent 5,986,066) in view of either Weetall (*Applied Biochemistry and Technology*, 41:157-188, 1993) or Sundberg et al. (US Patent 5,624,711) applied as under 35 U.S.C. 103(a) as set forth in the last Office action because:

10. It refer(s) only to the system described in the above referenced application and not to the individual claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

The declaration submitted by applicant demonstrated that the microarray of the claimed invention is being stable (for storage shown in paragraph #6 of pg. 2), reproducible (for manufacturing paragraph #7 of pg. 2), sensitive (for spotting microarray paragraph #4 of pg. 1), and its effectiveness (for immobilizing nucleic acid paragraph #9 of pg. 3). Since the claims of the current elected invention of this application is drawn to a ***method for making microarrays by oxidizing the olefin on the solid support to form the aldehyde functional group for immobilizing a biological molecule***, the objective evidence of the declaration does not show how the method steps of the current elected invention is nonobvious over the method steps of the prior art that is the oxidation of an olefin on the solid support to form the aldehyde functional group for immobilizing a biological molecule. In what ways are the method steps of the current elected invention an improvement from the method steps of Barner et al. in view of either Weetall or Sundberg et al? Further, there are no comparisons that would demonstrate how the method steps of the current elected invention are an improvement from the method steps of the

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prior art. Therefore, it is unclear how the claimed method steps are an improvement over that of the prior art.

11. In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Response to Arguments

12. Applicant's arguments filed 9/13/02 have been fully considered but they are not persuasive.

13. Applicant contends that Barner et al. (US Patent 5,986,066) does not suggest that an olefin would be expected to oxidize into an aldehyde. Further, applicant alleges that Barner et al. does not supplement the deficiencies in the Weetall (*Applied Biochemistry and Technology*, 41:157-188, 1993) and/or Sundberg et al. (US Patent 5,624,711).

14. It is the examiner's position that Barner et al. does suggest that olefin would be expected to oxidize into an aldehyde for it is inherent in the oxidization of an olefin to carboxylic acid that an aldehyde would also be produced. In fact, it is well known in the art that in the oxidation of alkenes (olefins) that aldehyde is produced first and then further oxidized to an acid (carboxylic acid) as shown by Richardson (US Patent 3,939,096; col. 5, lines 39-46) and Fox et al. (*Organic Chemistry*, Jones and Bartlett Publishers, Inc., 1994; pg. 359, lines 29-31 to pg. 360, line 1). Therefore in the method of Barner et al. for the oxidization of an olefin to carboxylic acid, aldehyde would also be produced by the oxidization of the olefin. Further, the rejection under 35 U.S.C. 103(a) is that of Barner et al. in view of either Weetall or Sundberg et al. in which the

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deficiency of Barner et al. would be supplemented by Weetall or Sundberg et al. The obviousness of this combination is reiterated below:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Barner et al. by including the aldehyde functional group as taught by Weetall and Sundberg et al. because it is well known that any suitable functional group such as an aldehyde, a carboxylic acid or amine can be use for the immobilization of biological or chemical molecules (Weetall: pg. 166, lines 3-23; Sundberg et al.: Fig. 8-11; col. 2, line 19-24; col. 16, lines 32-37; col.3, lines 60-65). Therefore, it would have been an obvious matter of design choice to have an aldehyde functional group rather than a carboxylic acid group (Barner et al.). This is particularly true since in the Barner et al. process it would be expected that the octenyl group would first be oxidized to an aldehyde and then further oxidized to the carboxylic acid.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on *Increased Flex Schedule* and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct
November 27, 2002


PADMASHRI PONNALURI
PRIMARY EXAMINER